



SHINJINI GHOSH—THE TECH

**Preparation goes on at full speed in 2.009** build challenge Friday Oct. 5 on Killian Court. 2.009, a Course 2 (Mechanical Engineering) capstone class, is known for its large budget and the innovative challenges it poses to students.

# Harvest Co-op shuts doors after 47 years

## Co-op provided fresh, local produce

By Derek Yen

Harvest Co-op Markets closed its Massachusetts Avenue location Oct. 12 as a result of financial insolvency.

Located in Central Square at 580 Massachusetts Ave, Harvest provided patrons with cheap groceries under the cooperative model, wherein members of the cooperative each own a single share of the company, which purchases supplies in bulk and redistributes any profits back to shareholders.

Founded in 1971 at Boston University, Harvest has since its creation been dedicated to "organic, natural and wholesome food choices, ... sustainable agriculture, certified organic, local and small family farms,

and fair trade businesses," according to its website.

Students with dietary restrictions or concerned about the provenance of their food valued Harvest as a place to purchase vegan, gluten-free, or organic goods in bulk at low prices.

"I feel it was very valuable for students to promote plant-based lifestyles primarily because it had such a high stock of local, fresh produce," Jennifer Fox '21, president of the organization mitLEAF, which promotes sustainable diets such as vegetarianism and veganism, said in an interview with *The Tech*.

Harvest's branch in Jamaica

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### IN SHORT

Second quarter PE classes start the week of Oct. 29.

**Family weekend** is Oct. 26–27! Registered family members can attend open classes and other events.

There will be a **flu shot clinic** today from 3–6 p.m. in the Tang Center (E51).

Sophomores and juniors can begin submitting applications (due Nov. 4) to become a **Burchard Scholar**, a program for students with strong interests in the humanities, arts, or social sciences.

Interested in **joining The Tech?** Stop by for dinner Sunday at 6 p.m. or email [join@tech.mit.edu](mailto:join@tech.mit.edu).

Send news and tips to [news@tech.mit.edu](mailto:news@tech.mit.edu).



Harvest Co-op's Central Square location displays two "Closed for Business" signs on its doors.

### DIAGNOSES AND DATA

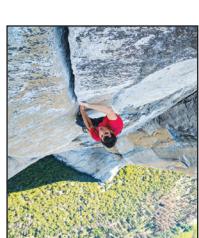
Researchers investigate AI in healthcare.  
**SCIENCE, p. 7**

### SUPER MARIO COMEBACK

Get together with friends for this super fun game. **ARTS, p. 8**

### HURRICANE WOES

Fret not with this list of advice. **CAMPUS LIFE, p. 6**



### SOLO FEAT

One big wall, one adventurous climber, one amazing journey. **ARTS, p. 8**

### A DIFFERENT MACBETH

Shakespeare's take on the Gunpowder Plot of 1605. **ARTS, p. 9**

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# MIT to launch \$1 billion College of Computing in 2019

*College expected to increase joint Course 6 degree options for students*

By Patrick Wahl, Anshula Gandhi, and Jessica Shi

STAFF REPORTERS

President L. Rafael Reif announced Monday the creation of a new college at MIT, set to open next September, dedicated to the study of computing and artificial intelligence.

Named after Blackstone Group Chairman Stephen A. Schwarzman, whose \$350 million donation forms the bulk of the \$1 billion commitment, the College of Computing is expected to create 50 new faculty positions and foster collaboration between departments, though many logistical details are still unclear or undecided.

The college will absorb the "majority of EECS students," according to an FAQ published by MIT News. The Computer Science and Artificial Laboratory (CSAIL), the Institute for Data, Systems, and Society, and the MIT Quest for Intelligence are also expected to join.

However, Institute leadership does not intend for the college to be an insular Course 6 bastion. Provost Martin Schmidt PhD '88 described the college in an interview with *The Tech* as a "school plus the connective tissue" between other disciplines: hence its distinction as a "college" among the five existing schools.

"If you think about the five schools as verticals, think about the college as cross-cutting," Dean of Engineering Anantha Chandrakasan told *The Tech*. Twenty-five of the 50 added faculty will be "bridge" fac-

ulty with joint appointments across departments.

The most significant long-term change students can expect to see in their education as a result of the college is a bigger variety of joint-degree programs with Course 6, Chandrakasan said. These joint majors, such as 6-14, have seen "significant growth in enrollments," but created problems in areas such as advising, which Chandrakasan said the new faculty will help to alleviate.

"I hope that the College will eventually have some autonomy in degree requirements for majors within the College," Srini Devadas, EECS professor and a 6-7 oversight officer, wrote in an email to *The Tech*. "I imagine a very broad Computing major that uses the current CS minor as the CS requirement of the major and allows many tracks, each offered by a host of departments across the five Schools to produce new 'majors' as diverse as computational journalism and quantum computing."

Though the college launches next year, students may not experience tangible differences in their education by that date, Reif said in an interview with *The Tech*. "Things will probably look more or less the same" come September, Reif said. The college will need more time to hire faculty and develop degree programs.

Hiring is expected to be complete in approximately five years, and the expansion will represent a five percent growth in MIT's total faculty,

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# MIT-Imperial College London exchange program launched

## MIT and Imperial to exchange eight students each

By Jocasta Manasseh-Lewis

STAFF REPORTER

MIT has launched a two-year pilot for a multi-departmental exchange with Imperial College London, in an effort to fill the gap left by the termination of the Cambridge-MIT Exchange (CME) in 2017.

There are nine departments participating in the pilot: Courses 2, 3, 5, 6, 10, 12, 16, 18, and 22.

MIT and Imperial have sent and received the first group of exchange students. Two MIT students from Course 10 are currently at Imperial, and six more will be sent in the spring. MIT has received eight students from Imperial, who will stay

for the entire year.

The pilot is an expansion of the original academic exchange with Imperial, which involved only Course 3 and 22. GECD (now two offices, CAPD and Global Education) worked with Vice Chancellor Ian Waitz and the departments and faculty that had previously been

very active in CME to gauge interest in developing a similar exchange with Imperial.

"There is a different teaching and learning environment [at Imperial] — that's what we want students to get exposure to. There is much more emphasis on working individually and independently — so that's a huge benefit for our students going

forward, either for employment or for grad school," Małgorzata Heddick, associate dean of global education, said in an interview with *The Tech*.

At U.K. universities such as Imperial, students usually live on campus for the first year only and studying is independent rather than focused on recitations and office hours. There are no midterm exams or problem sets during the term.

"It was a different way of learning, and I think I prefer it here [MIT] than there [Imperial] because I didn't understand much of what I was learning until the very end,

London, Page 2

# Susan Silbey: 'The college has been created, but it has not been designed'

**College**, from Page 1

according to the FAQ. The graduate student population is expected to grow naturally as a result, while any impact on the undergraduate class size remains undetermined.

Dean of HASS Melissa Nobles told *The Tech* that one new program under consideration is a concentration in computational cultures, which will group together anthropologists, political scientists, and other humanities experts and students to think about "the larger societal impacts of technology and computing." Discussion of the program began over the summer, spearheaded by Director of Science, Technology, and Society Jennifer Light.

A new building of an estimated 150,000 to 160,000 square feet will be built for the college, with an anticipated completion date of 2022. (The newly opened MIT.nano facility is 200,000 square feet, for comparison.)

The location of the building has yet to be determined. Schmidt declined to list specific locations under consideration but confirmed that the project will involve new construction, either on an empty site or by tearing down an existing building.

EECS faculty will likely retain a mixture of affiliations — some with the School of Engineering, some with the College of Computing, and others with both, Chandrasekaran said. The electrical engineering side of Course 6 will remain strongly associated with the School of Engineering.

MIT leaders included faculty in discussions about the college after MIT's Turing laureates called for a school of computing last September, according to Devadas. Meetings started in January and engaged over 400 faculty members, Chandrasekaran said at the faculty meeting.

Devadas, who had penned his own letter supporting the school in November, wrote that he has "already heard the 'shock and awe' emanating from [his] colleagues at Berkeley."

Patrick Winston '65, a professor of artificial intelligence and computer science, also lauded the move, calling the decision to denote it a college (rather than a school) a "stroke of genius" in an email to *The Tech*. "The leadership of the College of Computing can think about how to serve all of MIT, not just the College of Com-

puting itself," he wrote.

"In the short term, the benefits will come from research in machine learning, especially applications of deep learning," Winston wrote. "In the long term, I have a very romantic dream of discoveries on par with those of Copernicus, who showed where we are in the universe, with those of Darwin, who showed where we are in evolution, and with those of Watson and Crick, who explained our biology."

Schmidt said there has been no backlash from non-computer science faculty over the expansion of MIT's computational research and education resources. "Everyone feels their field is being transformed by computing," he said, though he mentioned he did hear some "concern" and "angst" over what the transformation would look like.

"I think of myself as a computer scientist and I don't work in AI in the traditional sense. However, I have a broad view of AI and

**A new building of an estimated 150,000 to 160,000 square feet will be built for the college, with an anticipated completion date of 2022.**

also think that AI has broadened in scope over the past few years," Devadas wrote. "AI requires CS theory and CS algorithms, and computer hardware to run on."

Many practical details of the college are still up in the air. "The college has been created, but it has not been designed," Susan Silbey, chair of the faculty, said in a faculty meeting Wednesday.

A dean must be appointed, and the search advisory committee is still being finalized, according to the FAQ. The committee will be chaired by Institute Professor Ronald Rivest, Chandrasekaran announced at the faculty meeting.

Administrators are also still thinking over whether a more technical or humanistic background will be prioritized in hiring interdisciplinary faculty, Schmidt said in the interview.

Schwarzman, whose donation is tied for the largest individual gift

in MIT's history but who has also been criticized by some for his ties to President Trump, "won't be engaged in running the academic side" of the college and holds MIT under "no conditions" regarding the donation, Reif said.

Beyond Schwarzman's contribution, MIT has secured an additional \$300 million "through other fundraising," the FAQ said.

*The New York Times* wrote in its headline that MIT had announced plans for a "college of artificial intelligence." Schmidt quipped at the faculty meeting that this phrasing "sells newspapers," but Reif's letter to the community Monday, which mentioned AI six times, centered all three of the listed goals of the college around the development and delivery of AI-tools.

The announcement for the college comes just months after the launch of two other AI-focused initiatives, the MIT Quest for Intelligence in February 2018 and the MIT-IBM Watson AI Lab in September 2017.

Chandrasekaran and Reif differentiated the programs by emphasizing that the Quest and the IBM Watson collaboration were primarily structured to drive AI research, whereas the college aims to advance AI (and computing) education, in part inspired by the Quest's success.

Reif justified the decision to invest the money and resources into AI rather than another priority. "Instead of saying that we're going to just put a billion dollars on climate change," he cited as an example in the interview, "we're putting it on the foundations of what will help everything, including climate change."

Both Reif's letter and the FAQ called for ethical and societal concerns to be woven into the new college and its curricula.

Nobles said the plan is not to ask students to "take an ethics course and go along their way" but is instead geared towards creating a cultural change. Specifically, Nobles envisions the faculty members who are experts in humanistic fields to engage with computer science faculty and discuss ethical implications of their work.

The creation of the College of Computing is the first major change to MIT's structure since 1950, when SHASS and Sloan were formed.

*Zoe Anderson contributed reporting.*



**A baby enjoys Garba-Raas**, a celebration of Navratri which is a major festival held in honor of the divine feminine, organized by MIT SAAS Oct. 12 at the Student Center.

## mitLEAF cites need for more plant-based diet options

**Harvest**, from Page 1

Plain, its other remaining location, is also closing.

"Harvest is approaching [financial] insolvency with no viable path forward," an email sent Oct. 4 from Harvest's leadership to its members read. "We have put many cost controls into place, reducing purchasing and labor costs. Unfortunately, it hasn't worked. Sales continue to drop, and Harvest continues to lose significant money each month."

Fox described Harvest's closure as "another loss of opportunity for students to cook for themselves and get fresh local produce."

"Something that would be really awesome as a response to this would be for MIT administration to show their support of students with plant-based lifestyles and make sure that dining options on campus provide good plant-based, nutritious options," Fox said.

Joshua Anderson, the treasurer of Harvest Co-op's Board of Directors, said in an interview with *The Tech* that the board considered other possibilities to continue Harvest, but none were successful.

"We had been trying to create a deal with National Co-op Grocers to start a new co-op in the same space and continue the operations, just under a different name," Anderson said. "Unfortunately the resources it would have taken to

create that deal were greater than National Co-op Grocers' budget. Since Harvest was not able to identify any other potential buyers and it was losing money quite quickly, we made the decision to close."

Anderson believed that several factors have contributed to Harvest's decreasing profitability over the past few months. Previously, Harvest had occupied H-Mart's current location and sold prepared foods on site, but it was no longer able to provide these goods after moving to a new, smaller location without access to a prep kitchen or cafe.

Additionally, while Harvest initially was one of the sole providers of its niche — food that catered to certain dietary restrictions, or was organic, non-GMO, or responsibly traded — the advent of chains such as Whole Foods and the growing movement of organic food has created greater competition.

"It used to be the co-ops were the almost sole provider of organic produce, and now that's certainly no longer the case," Anderson said.

Anderson believes that Harvest's legacy will be felt through its impact to the growing discussion over the provenance of food.

"I think that we brought together a lot of people around the idea of healthy food, and that has taken off broadly in the community: Harvest itself is not the beacon that it used to be in that movement," he said.

## Academic exchange program supplements existing research exchange

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when I was studying [for final exams]," Sandra Glotzer '19 said in an interview with *The Tech*. Glotzer studied at Imperial during spring 2016.

"We are hoping that after this two-year pilot, there will be enough interest so that we will be able to grow the exchange. The idea would be to have at least two students per department, especially for the bigger departments," Hedderick said.

MIT selects students through an online application, after which MIT and Imperial work together to judge the fit and level of preparation of each student. MIT students in their junior year are

strongly preferred.

This is not the first instance of a partnership between MIT and Imperial. In 2013, MIT began a summer research exchange with Imperial. The exchange program was spearheaded by Professor of Materials Science and Engineering Linn Hobbs (MIT) and Professor of Materials Physics and Chief Scientific Advisor to the U.K. Robins in Grimes (Imperial).

Currently, ten departments are participating in the research exchange.

Each department can nominate up to two students for the research exchange, meaning twenty students will exchange places each summer. "We are at a very interesting crossroads for

the summer research exchange because we will need to find funding beyond next summer for the program to be able to continue," Hedderick said.

"London and Imperial College are wonderfully international, so it was not too difficult adjusting to a new culture," Milani Chatterji-Len '19, who participated in the summer exchange, said in an email to *The Tech*.

Kris Auyeung '19, who studied at Imperial during spring 2016, seemed to concur. "The people we met often came from places all over Europe and beyond, and hearing about their unique experiences and backgrounds was a particularly enriching part of my experience abroad," she said.

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## FEATURE

# The MIT Corporation, explained

## *Understanding the Corporation's membership and function*

By Susanna Chen and Kathryn Tso

Any visitor who enters the MIT Corporation website is met with a relatively simplistic layout: a description of the organization superimposed upon a photo of Lobby 7. Similar to the understated nature of the site, many students have little knowledge of the influence the Corporation has over the functioning of MIT.

As former Chairman of the MIT Corporation Dana Mead stated, the Corporation "has a single mission — to support the President, faculty, and staff in their work to assure MIT's continued excellence in research and education."

### Corporation Membership

The MIT Corporation has been a vital component to the administration of MIT since the establishment of the institution in 1861. The Corporation is comprised of 78 members: 45 term members (elected every five years), 25 life members (serve until 75 years), and eight ex officio members. All members serve without compensation and are often times notable figures in science, engineering, industry, education, and public service.

Many of the elected board members are well-known business executives, such as Roger Altman, the founder and senior chairman of investment banking advisory firm Evercore, Ash Carter, the 25th United States Secretary of Defense, and David Koch, well-known American businessman and philanthropist.

Nominations may be proposed to the Corporation's Membership Committee by members of the board, the alumni association, and by other notable figures in the areas of academia, government, and business. New members are then elected by the Corporation every spring.

Most recently, 10 new members were elected onto the Corporation in June 2018. They included Carter and Kiran Mazumdar-Shaw, chairperson and managing director of Biocon Limited, India's largest pharmaceutical company. Students of the most recent graduating class may also nominate their peers to ensure that "at all times there are five recent graduates serving as members of the MIT Corporation," stated Chairman Robert Millard, in an interview with *The Tech*.

Millard stated that one of the many considerations for nomination was "some understanding of finance and business because at some level [MIT] is a business." Corporation Treasurer Israel Ruiz also noted in an email to *The Tech* that the Corporation's members are among "the Institute's most generous donors, and their philanthropy often supports campus activities and initiatives that enhance student education and student life."

However, Millard clarified, "You cannot buy your way in [to MIT]. Money doesn't influence anything around [MIT]." According to Millard, board members are not informed of the monetary contributions of their colleagues. He also pointed to how admissions are need and donation blind and there have been instances where "[MIT] has turned down the children of major donors, which could cost us hundreds of millions of dollars."

Furthermore, Millard claimed it is unfeasible for donations to be used for personal financial gain,

as MIT will not decide to complete a project from a single donation; projects "cost [MIT] way more than the earned research dollars and donations."

Ruiz further emphasized the significance of establishing a boundary between the professional and personal lives of the Corporation members. He stated in an email, "The role of the MIT Corporation is to provide oversight and stewardship with respect to the activities of MIT. That is its sole charge... [Individual's] role in connection with the MIT Corporation is solely related to advancing the well-being of MIT, and the structure and operation of the Corporation and its committees make it inconceivable for any one member to be able to steer MIT in any sort of direction that may advance a personal financial interest."

However, some have still questioned the Corporation's independence from its members. One such member is David Koch, who provided a \$100 million grant for the Koch Institute for Integrative Cancer Research facility, which replaced the MIT Center for Cancer Research.

Recently, David and his brother Charles have been accused of leveraging their financial influence in George Mason University to hire and fire professors, spurring the creation of the activist group Un-Koch My Campus.

But contrary to the tumultuous relationship the notorious pair has had with other university campuses, Millard states that he has "seen only that they are beautiful donors...They have never influenced faculty...They have never made an issue."

### Responsibilities and Function of the Corporation

The Corporation is responsible for approving budgets, new degree programs and courses, and providing strategic guidance on MIT operations.

Its 78 members, including another 29 life members emeriti — members who are able to attend meetings but hold no voting rights — meet four times a year during which the individual committees report on their progress for the last months, the current financial status is presented, and new degree programs may be approved.

The Corporation is divided into Committees; each member is required to serve on two committees. Four standing committees bear the majority of the work: Executive, Membership, Risk and Audit, and Development. Millard stressed, "The committees are here for advising, not doing," and, "Nothing that the Corporation does involves day to day running of MIT."

### The committees are here for advising, not doing.

The Executive Committee is responsible for "general administration and superintendence of all matters relating to the Corporation." These matters include approving the Institute's annual budget, approving construction or renovation projects, such as the recently opened MIT.nano building, and allocating funds for students.

The Executive Committee also appoints members to the MIT Investment Management Corpora-

tion, (MITIMCo), which manages MIT's financial assets. Millard explained that "the Executive Committee takes responsibility for a lot of the more mundane, more frequent, more in-depth decisions that the administration needs approval and consent for."

### Visiting Committees offer an opportunity for junior faculty and undergraduates to influence the decisions made by the Corporation.

The members of this committee "need some kind of body of strategic expertise. Members need to have some understanding of finance and business because, at some level, [MIT] is a business. Above all else, we need people who really connect to the academic mission of MIT," Millard furthered.

The Risk and Audit Committee acts essentially as a regulatory body in the Corporation, looking ahead to ensure proper and legal management of funds and that all Corporation activities adhere to the law. Specifically, Millard elaborated, "The risk and audit committee really needs to probe and make sure that MIT's accounting is proper, its risks are reasonable, and its financial and operating health are assured."

The Development Committee secures the financial means for the allocation of resources to initiatives approved by the Executive Committee.

### MITIMCo

According to the MITIMCo site, its "mission is to deliver outstanding long-term investment returns from MIT." The investment returns are "geared toward enabling the Institute's activities and mission, now and in the future," stated Ruiz. The funds enable MIT to invest in student academic and wellness programs and advance its education, research and innovation goals.

MITIMCo manages approximately \$25.3 billion in assets and achieved returns of 13.4 percent in the fiscal year ending on June 30, 2018.

As stated prior, members of the Company are appointed by the members of the Executive Committee who primarily seek individuals with a high level of experience in asset management. However, this oftentimes results in the recruitment of individuals affiliated with other financial institutions. To combat this issue, MITIMCo stated on their website that "MIT will not invest with an investment manager if a member of the MITIMCo Board works there and would benefit from fees paid to that firm."

In addition, MIT Corporation members, Institute senior leadership, and some outside experts in investing serve on the Investment Management Company Board ("MITIMCo Board"), MITIMCo's oversight board. Ruiz emphasized that Board members are not involved in picking funds.

The company is divided into three main teams which streamline the process of managing investments: Real Estate, Global Investment and Operations.

The Real Estate division specializes in managing the properties MIT owns and ensuring that infrastructure on campus is conducive towards "maintaining and improving the quality of the innovation environment," as stated on the MITIMCo website.

The Global Investments team seeks to generate funds through a bottom-up approach which focuses on analyzing individual stocks and investments in order to mitigate the amount of volatility in MIT's financial investments.

Acting as the backbone of the company, the Operations team "supports the investment process and ensures the integrity of financial reporting." They manage internal relations and ensure data and reports are created reliably and on a timely basis.

Although the specific investments made by the company may not be disclosed, the Report of the Treasurer is released publicly every year by MIT's Vice President for Finance which details in the 2018 report that MIT's "investment policy is based on the primary goal of generating high real rates of return without exceptional volatility." Consequently, MITIMCo seeks to develop a "broadly diversified" portfolio favoring more stable investments such as in real estate, private equity, and real assets to reduce volatility.

### Undergraduate Involvement

There are two ways for undergraduates to get involved with the MIT Corporation: 1) through serving on the Corporation Joint Advisory Committee on Institute-Wide Affairs (CJAC) and 2) through providing feedback to Visiting Committees.

CJAC consists of six Corporation members, six faculty members, and six graduate or undergraduate students. According to the Corporation website, the committee "makes available to the Corporation information, views, and advice resulting from discussion and interaction among students, faculty, and Corporation members."

Unlike the insular nature of many corporate boards, Visiting Committees allow the MIT Corporation to receive external feedback.

Every two years, groups of individuals selected from the Corporation, alumni, faculty, and other figures from reputable institutions or groups gather to discuss a unique aspect of MIT's educational status covering every field of interest in the institution.

Visiting Committees offer an opportunity for junior faculty and undergraduates to influence the decisions made by the Corporation.

Millard described the careful process of choosing members on these committees: "We make a combination of alumni — often but not always from that exact department — people who've had experience with that department, and Corporation members. Some of them are non-graduates from MIT, so roughly one-third of the committee is from outside the university."

Although undergraduates are not able to become members of a Visiting Committee, they are able to attend sessions where they may discuss their concerns with the committee members.

Issues concerning undergraduates are consistently brought up in Corporation meetings. Chancellor

Cynthia Barnhart is a frequent presence at the meetings and brings up "different aspects of the student experience, including the undergraduate curriculum, the background and talents of each newly admitted class, and student life issues such as efforts to enhance student wellness and foster an inclusive campus culture," stated Millard in an email.

Millard and other board members have concerns when it comes to undergraduate participation, as "the only undergraduates that show up have a point of view, which is not necessarily representative of the wider student body."

Each committee meets once every two years. "The Dean of the committee comes in to talk without any of the department faculty there. And then they'll open it up, and there'll be a couple of hours of discussing what the issues are. Junior faculty can talk in confidence about the things they're not happy with," Millard stated. The committee then "sits down and formulates a preliminary set of conclusions. The administration and I listen to what they say. There is a report about the department to the administration, which will tell us what's good and what's bad."

To ensure change is actually implemented, the next Visiting Committee meeting starts off by discussing the recommendations

### Millard hoped that more undergraduates would become involved in Visiting Committee sessions.

from the last committee meeting.

Visiting committees may also act as advisory groups to the Corporation. These include the committees specializing in Undergraduate and Graduate Education, Student Life, and the Department of Athletics, Physical Education, and Recreation.

The Koch Childcare Center is a concrete testament to the work of the Visiting Committees. According to Millard, as a result of graduate student feedback, the Biology Visiting Committee determined that the MIT graduate community was in need of more robust childcare facilities. In 2013, a 14,000 square foot childcare center located next to Simmons Hall on Vassar St. was opened in 2013; the bulk of its development was supported by a \$20 million donation from David Koch.

Recently, through the platform Visiting Committees provide, students were able to present a proposal for redesigning the first-year experience. This served to propel the new initiative among the members of the Class of 2022 in which an additional three P/NR GIR classes are offered.

Ruiz stated that Visiting Committees are "among the strongest and most active at a major research university and provide valuable counsel on current activities and future directions for MIT's academic programs and major activities of the Institute." As such, Millard hoped that more undergraduates would become involved in Visiting Committee sessions.

```
File Edit Options Buffers Tools Im-Python Python Help
from new_skills import *
def learnMarketableJobSkills():
    return linux, OSX, javascript, applescript, perl, python, PHP
if self.interest == True:
    print "E-mail join@tech.mit.edu"
---:---F1 joinTechno.py (Python)--L1--Top---
```

Can you beat this drawing?  
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# OPINION OPINION OPINION OPINION OPINION



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## LETTER TO THE EDITOR

# How (not) to spend one billion dollars

*We should do things not because they are hard, but because they are important*

What are the challenges that people in the future will face? Climate change is going to be an issue, cities will be congested, diseases will still exist, nuclear energy sources need to be explored, and so on. All of these problems are in fields that MIT has great qualifications for — all of our departments, professors, students, and research are highly respected around the world.

But instead, we're focusing on data science and artificial intelligence. These fields most definitely have applications with an obvious societal need — MIT GOV/LAB comes to mind, if you've heard of it — but most graduates in the field, from MIT or otherwise, do not tend to go down these paths. From my experience, they enter sectors like data mining and business analytics. At the end of the day these innovations help make businesses more efficient, which certainly contributes to our society's productivity, but many of these challenges that MIT prides itself on trying to solve are ones that businesses alone cannot fix.

Analytics companies and others that hire data scientists and programmers often flaunt the "challenging problems" that their employees solve. I am not arguing against someone seeking such a job, be-

cause such things can be genuinely intellectually fulfilling, and sometimes the only people who can tackle such a problem are those who have been through MIT. But as an institution that seeks to better humanity through the sciences, our mission should not be to solve hard problems; it should be to solve pressing problems. Business analytics has never been, and never will be, a field with the potential to improve the human condition or a field whose lack of development severely holds back humanity from achieving something great. I stand by the belief that just about any social problem that data science can help solve (say, car accidents, or the American healthcare system) already has accessible solutions that have already been proven effective (increased public transport, and some form of universal healthcare).

If we really want to tackle important problems that have huge global impact, why aren't we putting this large sum of money into our climate change research, our urban planning department, or our economics and political science departments? Why aren't we putting our money to improve the quality of, and increase the quantity of, the policymakers, economists, and biologists that we produce? Or

improve the quality and quantity of all of the research that we here at MIT produce? Why are we "selling out" to jump on the AI train, when there are things that have so much more impact on the world that we could be doing with this funding?

Or why aren't we shifting our computing focus onto applications with a more obvious social need? Why does eecs-jobs announce email about generic startups in need of programmers? Why are tech companies obsessed with the "solutions" and not the "problems"? How many of your peers are involved with Code for Good? Do you, the reader, actually know what MIT GOV/LAB even is, or even of its existence? (I certainly didn't until I wrote this piece.)

I'm not really disgusted so much as I am disappointed that MIT, whose mission is to do scientific research that benefits all of humanity, is following the data science and AI trend that the rest of the corporate world is obsessed with. At the end of the day, society wants data scientists and analytics, but we *need* climate scientists, biologists, engineers, urban planners, public policy wonks, and so many other types of people so much more. We should spend our money to produce more of these types.

— Faraz Masroor '21

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## CORRECTIONS

An article about Bohemian Rhapsody, an upcoming movie about the band Queen, in last week's print edition incorrectly cited Wimbledon instead of Wembley Stadium as the location of the Live Aid concert in 1985.

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## GUEST COLUMN

# How America's approach to the North Korea conflict is broken, and what's been missing

*US administrations have consistently failed in containing the threat posed by North Korea — a stronger approach is necessary*

By Octavio Vega

#### Background on the DPRK

With President Trump's recent nearly catastrophic tweet about the removal of U.S. troops in South Korea, questions regarding North Korea's threat to the world continue to circulate across the globe. In the recent past, United States presidential administrations have repeatedly failed to manage the country's development of weapons of mass destruction. While the Trump administration claims to have made progress in catalyzing the denuclearization of the secretive dictatorship, it is not unlike previous presidencies on this front.

The Democratic People's Republic of Korea (DPRK) has, for decades, demonstrated activity in accumulating missile technology and developing increasingly sophisticated weapons of mass destruction (WMD). In January of 2003, the DPRK formally withdrew from the Treaty on the Non-Proliferation of Nuclear Weapons (NPT), and has not ratified the Rome Statute — thereby refusing to surrender its international legal sovereignty to the UN-administered International Criminal Court (ICC) in The Hague.

Although numerous members of the international community have imposed heavy economic sanctions on the DPRK, the country continually reinforces its offensive weapons and technologies programs.

The DPRK claimed this aggression would cease following Kim Jong-Un's summit with President Donald Trump on June 12, 2018 in Singapore. During the historic meeting, the DPRK stated that it would "work toward complete denuclearization of the Korean Peninsula." Pyongyang has yet failed to provide evidence for these claims, and North Korea's threat cannot now be nullified in the minds of U.S. officials or civilians. As such, strategies for removing the Kim regime from power are becoming increasingly required for stability.

#### Strategies and Factors

As world governments remain stagnant, stronger foreign policy — reminiscent of regime change — must re-enter the global scene and further action must be taken by the United States.

Under the Clinton, W. Bush, and Obama administrations, appeasement (sending humanitarian aid in exchange for promises of denuclearization) of the DPRK has been the most popular approach; however, the DPRK has consistently failed to see these agreements through.

The vast array of resources and power at its disposal gives the U.S. access to numerous militaristic and operative approaches to eliminate the North Korean threat; however, there are plenty more factors preventing action in North Korea than there are allowing it.

The reason the U.S. cannot simply pursue a full-scale attack is two-fold: one factor being the allies and powers in North Korea's vicinity, and the second being Kim's potential to retaliate vigorously.

North Korea is surrounded by two nations pivotal to the conflict: China and South Korea. While China highly prioritizes trade with North Korea and stability in the DPRK, South Korea, by contrast, serves as a strong ally to the United States. The fallout of any suddenly violent combat in the peninsula would likely spill over into both nations, spawning human rights crises due to nuclear or toxic pollutants, refugees, and more.

One possible method to remove Kim is assassination. While this ideally prevents the deaths or mass exodus of Korean citizens, the apparent simplicity of this plan belies its true complications. For one, state-sponsored assassination of a head of state defines an act of war. Further, travel restrictions prevent virtually any individual from entering the country. Even taking for granted an assassin's entry, locating Kim greatly overshadows the difficulty of any previous task in the process.

**The fact that North Korea threatens lives beyond the Far East and the U.S. cannot be disputed. If we allow the world's skepticism to hinder our initiatives towards global progress, then apathy will mark a new failure for the world.**

Even if Kim were assassinated, the power vacuum left in his wake would summon much greater troubles. Soon after George W. Bush left office, President Obama — following Bush's initial Status of Forces Plan in Iraq and the ambition of subduing Libya's Gaddafi — removed almost all ground troops from Iraq. In so doing, the U.S. left behind a power vacuum: people in the war-torn nation were left to their own devices; power hungry caliphates like ISIS — even more extreme than previous despots — moved to seize control and fill the void. Hence, a Middle East plagued by terror and religious strife of an even more extreme degree was created.

A promising strategy requiring more measures and nuance is a U.S.-sponsored invasion. Fourteen years ago, America leveraged military resources to depose the leader of Iraq — a feat which was successful partial-

ly by 2003 when Hussein was captured, and in 2006 when he was executed by the Iraqi Special Tribunal.

**As world governments remain stagnant, stronger foreign policy aimed at regime change must re-enter the global scene and further action must be taken by the United States.**

A regime change plan contingent on the nature of human beings to seek freedom and launch rebellions presents hope for unseating Kim Jong-Un. North Koreans have heard rumors of freer lives below the 38th Parallel of the DMZ from radio broadcasts and have escaped across the Chinese border, bringing back stories of a lifestyle in which there is more opportunity, choice, and freedom.

History is replete with the pattern of revolutions being born of dejected peoples: King Louis XVI saw his empire fall by the hands of his French proletariat; Muammar Gaddafi was murdered by Libyan rebels; even Saddam Hussein's once subjects cheered in the streets for days following his capture. Decades ago, regimes like Stalin's in Russia, Pol Pot's in Cambodia, and Mao's in China made every attempt to shield their subjects from the world — but the North Koreans are an increasingly awakening people.

Trying to forcefully deter nuclear ambitions in Pyongyang where patience instead will bring change is as foolish as it is lethal, especially considering how other changes within North Korea are much more likely than complete denuclearization. The U.S. should focus on allowing for the possibility of change rather than trying to force Pyongyang out of the status quo via policies of appeasement.

The people of the DPRK are developing ideas of insurrection and the potential to execute such actions; however, U.S. forces must be poised to foster the conditions necessary for this kind of natural transition to occur.

The U.S. must very carefully accumulate troops and military resources in South Korea and Japan to build up a security force much greater than that which already occupies the Sea of Japan and the South China Sea in allied outposts surrounding the Hermit State.

When the first stages of rebellion are upon Kim Jong-Un, the U.S. should deploy the forces gradually amassed in neighbor-

ing territories — preferably armed with sufficient intel as well — locate and seize their nuclear weapons as quickly as (and if) possible, help train insurgents to unseat their leader, and create border guards to mitigate a refugee crisis. If this succeeds, we will allow Kim's fate to be decided and move on to the next, most challenging piece.

#### Aftermath

If the Kim dynasty is removed successfully, the U.S. is far from done — if history is any indicator. After the rapid fall of Saddam Hussein's regime, sectarian violence prevailed in Iraq as U.S. forces loosened their presence in the country. If the U.S. were to let go of its roles in maintaining security in a nascent post-revolutionary democracy, refugee crises could engulf China and South Korea, and, left unchecked, it's likely that another North Korean would, after skirmishes and civil conflicts, simply claim power once more and rule in the same fashion — possibly even worse — as did the Kim regime. In this scenario, we will have achieved nothing. The U.S. should work with the South Korean government to install regional security forces to help maintain the stability of a unified peninsula and promote a democratic transition.

While immediate unification of the Koreas following a sudden intervention or paradigm shift would cost trillions of dollars, the gradual convergence of North and South Korea's financial assets is the most economically feasible approach. North Korea has a GDP less than 1% of the South; hence, resources for humanitarian aid would need to come slowly from nations like the U.S. and South Korea. The South would foster the slow acclimation of North Koreans into society via paths such as the separation of special districts. Like defectors of the DPRK, these groups would then be introduced to the new society after which their lives will be defined by their place in democracy.

The international community has, in the past, been disjointed on interventionist resolutions to foreign crises. Still, the fact that North Korea threatens lives beyond the Far East and the U.S. cannot be disputed. If we allow the world's skepticism to hinder our initiatives towards global progress, then apathy will mark a new failure for the world. This plan idealistically relies on the continuity of human nature and boasts plenty of risk. Lives can be lost and populations threatened, but these are the sacrifices necessary to build a better and safer world.

Octavio Vega is a member of the MIT Class of 2022 studying Systems Neuroscience, as well as Electrical Engineering and Computer Science. He is also a chair for the MIT Model United Nations.

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OPINION

BY THE NUMBERS

# 5 things that help when a natural disaster is trying to eat your home

Juggling MIT and worries of home can be an exhausting combo

**By Nathan Liang**  
EDITOR

Last year was my freshman year at MIT, so I was already going through many life changes in a short amount of time. Then, Hurricane Irma slammed into Florida, my home state. On top of worrying about waking up for my classes, finishing psets, formulating a social life, and balancing extracurriculars, I also had to worry about my family's safety.

If you're experiencing something similar right now as a result of Hurricane Michael, I want to reach out a helping hand and let you know that you are not alone. I was there too, and many others have been as well. Here are a few things I did to help me get through MIT and the potential natural destruction of my home:

**1. Check the news, but don't do it too much.** It almost became a daily routine

for me to check up on Hurricane Irma as it traveled over the Caribbean and made landfall in Florida, just to see how it might potentially affect my family. However, it got to the point where I started obsessively checking Irma's path during every free moment of the day, and it would stress me out to no end to see an update for the worst. I want to warn people away from this. While it may provide some comfort to know that natural disaster XYZ will not completely obliterate your home, don't let it preoccupy you 24/7.

**2. Call your family or leave them texts.** Let them know that you're still thinking about them during this tough time. It will provide them comfort to hear from you and it will provide you comfort to know how they're doing as well. Sometimes, my calls back home during Irma were almost comical. My mother or little sister would

mention losing power as though it were as common as going grocery shopping; hearing them talk so casually about the situation always helped ease my worries. They would also typically ask me about college, which also kept my mind off their situation.

**3. Talk to someone.** There's no denying that worrying about your family in the midst of a natural disaster is stressful. It's even worse if you're trying to deal with these worries on your own. Try to schedule time in your day to sit down and have a chat with a friend, let your feelings out, and take solace in the sympathy of a friendly face. You might even find that someone else is going through or has gone through the same thing as you and the two of you can bond over this shared experience. Also, don't forget that MIT has a wealth of support resources for stressed students, which can be found here.

**4. It's okay to cry.** Stress crying is a thing, and it's been generally proven that crying is good for you. Sometimes you just gotta let it out. So don't be ashamed to cry or vent in the privacy of your dorm room or an abandoned classroom. Alternatively, it's always good to try and find free time for "me time." Pick a day on the weekend or an hour between classes to just chill and relax. Don't let yourself stress or worry about anything in your life and just do something that's always helped you stay grounded, whether that is playing video games, binging Netflix, or knitting.

**5. Once the storm has finally passed, call your family again and check in with them.** This goes back to what I mentioned earlier. For both parties, hearing from each other will provide a familiar comfort. Who knows? They might also mention funny anecdotes of cats wandering the streets or trees dancing in the wind.



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# Machines and medicine

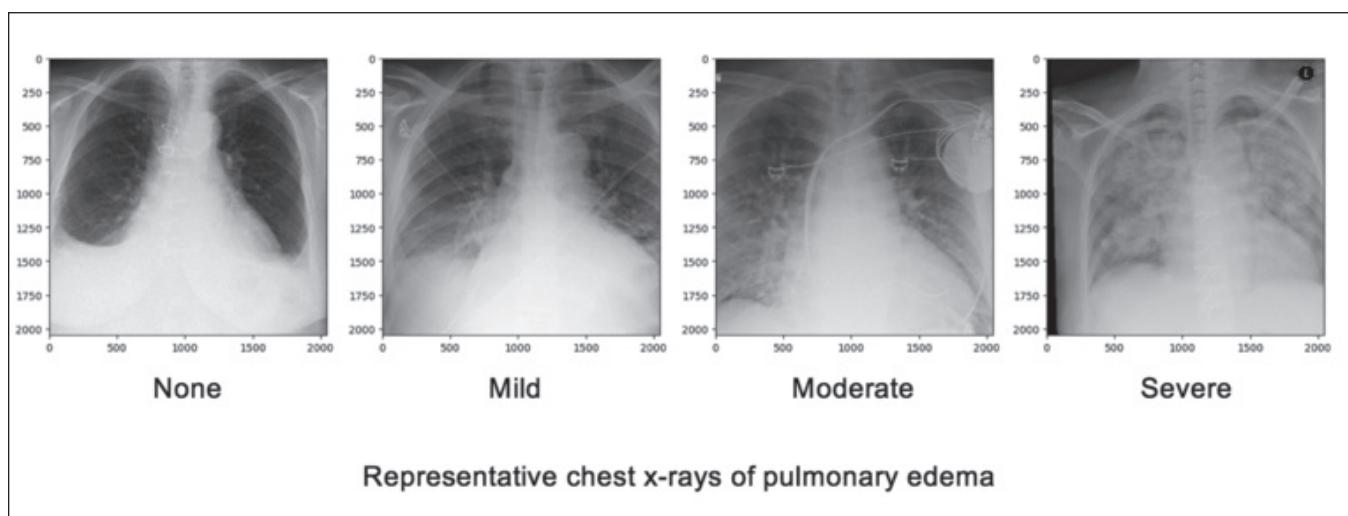
By Jocelyn Chen and Jordan Harrod

Artificial intelligence is beginning to cement itself as a useful tool for researchers and engineers alike, and it has the potential to become a new addition to the health professional's toolkit. There are a number of groups at MIT that are exploring the immense potential benefits that artificial intelligence can bring to the healthcare industry. Ranging from diagnostics solutions to making unbiased algorithms, MIT researchers across campus are working to provide new technologies and insights into the future of AI in healthcare.

The Clinical Decision Making group at the MIT Laboratory for Computer Science is one such lab. The group focuses on clinical and biomedical informatics using machine learning methods. Researchers study data taken during a patient's stay in the hospital, such as blood pressure and heart rate. They then use this information to make predictions regarding whether or not a patient may need an intervention or if they are at risk of a certain disease. The group has also done work in natural language processing (NLP) techniques specific to parsing language in medical texts as well as many other applications in intensive care, security, and more. Matthew McDermott, a graduate student in the lab, believes the research will bring the "power of machine learning methods and data science to the clinical and biomedical space."

The Clinical Machine Learning Group, which is part of MIT CSAIL and the Institute for Medical Engineering and Sciences, also hopes to use machine learning to make predictions about a patient's health. One of their aims is to develop algorithms that can be used in any field, from healthcare to autonomous vehicles. Furthermore, they collaborate with clinicians to develop algorithms that enable precision medicine and guide clinical care. For instance, researchers in the lab partner with area hospitals to predict the progression of chronic diseases over years or decades in order to help patients and doctors better manage their condition. David Sontag, who leads the group, described one of his long-term goals as developing an "artificially-intelligent primary care physician."

The Medical Vision Group, led by Polina Golland of CSAIL, takes a different approach to artificial intelligence in healthcare by developing algorithms for medical imaging. The group's current work focuses on using machine vision to analyze how oxygen transport in the placenta affects fetal health, identify different conditions



**Ruizhi Liao of the Medical Vision Group** hopes that AI can one day assist in the interpretation of chest X-rays such as these by quantifying pulmonary edema in the event of heart failure.

in chest X-rays, and use cardiac magnetic resonance images from pediatric patients with heart defects to aid in surgery planning. Ruizhi Liao, a graduate student in the lab, is working with the Beth Israel Deaconess Medical Center to develop algorithms for assessing heart failure patient status by quantifying pulmonary edema in chest X-rays.

Though AI provides many possibilities to better understand human health, it also presents many challenges. There are a number of barriers that must be overcome in order to deploy any of the models produced in the lab. A particularly difficult issue to tackle relates to data collection and data processing. "There are a lot of price concerns, data is expensive to gather, and data is gathered as a byproduct of treatment... It makes our job more difficult as machine learning scientists," said McDermott of the Clinical Decision Making group.

Liao, of the Medical Vision Group, highlighted access to medical images as a significant barrier. "Lots of recent machine learning progress comes from larger datasets and better computational resources. We can solve the second problem, but the challenge is that it is still very hard to get healthcare data," says Liao. He is also concerned that researchers are not targeting problems that are useful to clinicians due to the lack of communication between the two groups. Processing medical data presents an interesting and nuanced challenge, as clinicians use particular jargon and patterns in medical data can be confounded by a doctor's choices. For example, a model might predict a higher rate of survival for a patient with a more severe illness because patients

with more severe illnesses are treated first. These problems are difficult to overcome because care should come first, and data for machine learning is an offshoot of the primary task at hand. Researchers in the field are aware of these many complications and are optimistic about the future of AI in healthcare, but are also cautious as well.

Sontag echoed these concerns, stating that "many of the challenges won't be solved by AI; they'll be solved by better data." In fact, he is currently working to develop partnerships with clinicians and faculty to expand the pool of available data. Sontag was particularly concerned about the relay of information between clinicians and algorithms. "We have to recognize that humans will always be in the decision-making process. The consequences of that are that patient-providers may have access to information about the patients that the algorithms don't have access to." After all, doctors often have an innate sense of what may be wrong with a patient that cannot be communicated to an algorithm (often called "clinical gestalt"). Data interoperability, where important information is not recorded in the medical record, is also an impediment to healthcare. Patients may have their own preferences on the types of information they'd want shared with such an algorithm as well.

Sontag also worries about maintaining fairness throughout the process of developing algorithms for healthcare. "What happens if your machine learning algorithms are very accurate for one group of people and very inaccurate for another group of people? Because there are limited resources, the money is often spent on the set of

people your algorithm is most accurate for. That means that one group is getting much more of that resource than another group. And because health is so intimately tied to socioeconomic outcomes, that could have really long-term impacts on society, which I worry about," he said.

“Worry about,” he said. With a cautious mind and an open heart, experts step into the future hopeful. There are certainly many reasons to be. As medical testing becomes more complicated due to the integration of better technology, the results these tests provide may be incomprehensible to clinicians who do not have time to be trained on every new procedure. “Medicine is getting so complex. It’s not really feasible for one clinician to take the output of a patient’s genetic sequencing and figure out what to do with that,” said Sontag. Instead, he believes that decoding these results is an area where AI may be able to gain traction in the clinic. Artificial intelligence can be used in fields such as telemedicine, where it can assist in making more scalable care so that patients all around the world can obtain care remotely.

While predictive models might not yet be deployable, machine learning is a rapidly expanding area of research, and this growth brings in many fresh minds. McDermott is hopeful about the future of AI in the medical space because “There’s a big potential for impact in terms of helping people, and we’re just now starting to reach the point where we can bring these machine learning technologies to bear on data at magnitudes that we’ve never really been able to do before. So it’s a very exciting time to work in the field.”

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## FEATURE

# MIT considering renaming Columbus Day to Indigenous Peoples' Day

## *UA, AISES, and other campus organizations advocate for change*

By Edwin Song

In May 2016, the Cambridge City Council voted unanimously to name Indigenous Peoples' Day a city holiday, which the city will celebrate instead of Columbus Day. Two years later, the second Monday of October remains as Columbus Day on MIT's official calendars while student activists and campus diversity offices urge the institute to follow in the City of Cambridge's footsteps.

The MIT American Indian Science and Engineering Society (AISES) is currently communicating with Alyce Johnson, MIT's Manager of Staff Diversity and Inclusion and Interim Institute Community and Equity Officer (ICEO), about the potential for MIT to celebrate Indigenous Peoples' Day in place of Columbus Day. As Luke Bastian '21, a representative of AISES, reports, Ms. Johnson has expressed optimism "about there being a name change in time for next year."

"I have been working with a team of several faculty, students, and staff to discuss a possible change in MIT's observance of 'Columbus Day' to 'Indigenous People's Day,'" Ms. Johnson wrote in an email to *The Tech*. "So far, our work has included discussion, research and benchmarking."

More work lies ahead over the next few weeks for Ms. Johnson, who described plans to meet with supportive faculty and members of AISES, who will "send statements detailing [their]

Columbus Day opinions" for her to share with faculty. Afterwards, she will organize an opportunity for "community members interested in this topic" to provide their thoughts and comments.

### Cambridge, Boston, Brookline, and Somerville all honor Indigenous Peoples' Day.

#### A troubled history

MIT began observing Columbus Day since 1937, the very year it became a federal holiday. The institute expanded the long weekend during school year of 1975-76 and students now enjoy the following Tuesday off as well unless Labor Day falls on Sept. 1, 6, or 7.

Controversy has surrounded Columbus Day ever since the holi-

day was established. Poor Italian immigrants, marginalized and considered non-white by Anglo-Americans in the early 20th century, celebrated Columbus as a symbol of cultural and religious pride. When President Franklin D. Roosevelt proclaimed Columbus Day a federal holiday at their urging, he was opposed by nativists who protested its immigrant, Catholic origins.

More recently, criticism of Columbus Day has mainly focused on Columbus's role in the displacement, enslavement, and killing of Native people. Native American activists have advocated that Indigenous People's Day replace Columbus Day since as early as 1977, at the United Nations International Conference on Discrimination against Indigenous Populations in the Americas. In 1990, South Dakota became the first state in the United States to celebrate Native American Day instead of Columbus Day. A year later, Berkeley, California became the first city to follow suit, renaming the holiday as Indigenous Peoples' Day. Since then, over 50 cities and several other states in the United States have chosen to celebrate Native people this October.

#### The debate in local context

Although official MIT calendars currently refer to Columbus Day, some faculty have taken renaming the holiday into their own hands. The 6.02 course website lists two days of classes as cancelled due to Indigenous Peoples' Day. Professor Katrina LaCurtis declined to comment on this decision.

MIT Libraries maintain their own online calendar where they, too, celebrate Indigenous Peoples' Day. In an email to *The Tech*, Director of Libraries Chris Bourg described MIT Libraries' decision to go against the MIT administration's example as "consistent with Libraries' values of diversity, inclusion and social justice." In addition, she pointed out that Cambridge, Boston, Brookline, and Somerville, the communities that MIT Libraries serve, all honor Indigenous Peoples' Day. Ms. Bourg affirmed MIT Libraries' support for a "campus-wide conversation" on whether MIT should celebrate Indigenous Peoples' Day as well.

Should MIT make the switch, the Institute's move would echo that of Harvard last year. In 2017, Harvard University added Indigenous Peoples' Day to its calendar, acknowledging both Columbus Day and Indigenous Peoples' Day

on the second Monday of October. The university administration abstained from releasing a reason for the change.

### In September 2017, the MIT Undergraduate Association (UA) passed a unanimous statement urging MIT to rename Columbus Day to Indigenous Peoples' Day.

A year before Harvard in 2016, Cambridge established Indigenous Peoples' Day as a city holiday to celebrate in place of Columbus Day. Nadeem Mazen, the Cambridge City Councillor who spearheaded the effort to rename Columbus Day, said to the Boston Globe that naming the holiday Indigenous Peoples' Day would "reclaim the day" from Columbus and give it back to the people he killed. Vice Mayor Marc McGovern, an Italian-American, approved of the change, calling it a personal "cleansing." He added, "I do not want Christopher Columbus to be representing my culture."

Yet despite the unanimous vote, protests from members of the Italian-American community forced the Cambridge City Council to come to a compromise a mere week after the move was passed. To the City Council, community members described feeling disrespected and "punished" as a result of the city taking away a holiday celebrating contributions of Italian immigrants and the discrimination they faced. In recognition of their concerns, the council established Italian Heritage Day on Oct. 1 of each year.

#### Student perspectives

In September 2017, the MIT Undergraduate Association (UA) passed a unanimous statement urging MIT to rename Columbus Day to Indigenous Peoples' Day "in order to foster an inclusive community on our campus and show support for traditionally marginalized communities".

According to Kathryn Jiang '20, Vice President of the UA, they then sent the statement to Gus Burkett, the Senior Associate Dean for Diversity and Community. Dean Burkett did not respond to

*The Tech's* inquiries on the results of that conversation in time for the publication of this article.

According to Bastian, AISES only got in touch with Ms. Johnson recently, after "emailing directly different members of the MIT administration including President Reif and receiving very little response" before this year.

For Bastian, MIT's continued celebration of a man who committed atrocities against Native Americans felt disrespectful to Native students and "honestly, kind of puzzling." Although Columbus facilitated a cultural exchange that "had an extremely large impact on history," Bastian stated, "he himself does not seem worthy of celebration."

Bastian, too, urged MIT to drop Columbus from the holiday's name. Although the new name need not necessarily honor indigenous people, as November already exists as Native American Heritage Month, "doing what Cambridge has already done" would smooth the transition, he explained. Further, Bastian explained, a holiday named Indigenous Peoples' Day would raise awareness and understanding for what he termed "an ignored population" and give them "a nice platform to share about our traditions with people eager to learn."

This past Columbus Day, René Reyes '22 wrote a guest column for *The Tech* on how Columbus and subsequent colonizers inflicted a wave of violence and disease that decreased the native population in the United States by a factor of 30 and "catalyzed one of the biggest atrocities in the history of mankind".

Growing up in Costa Rica, Reyes had learned about "the atrocities that Christopher Columbus encouraged" overseas and was "slightly shocked" that Americans dedicated a holiday to him every year. In his guest column, Reyes emphasized his pride in his Hispanic identity, a heritage born of the Spanish colonization that Columbus catalyzed and the children of Spanish men and native women. And yet, Reyes wrote, he refused to ignore the "dark and shameful side" of this history and the current struggles of indigenous people whose land and opportunities are still being stolen.

In an email to *The Tech*, Reyes expressed support for MIT renaming Columbus Day to either Indigenous Peoples' Day or another "more inclusive" name that "celebrates the resilience and survival of the victims of colonization." He described the move as an important

step towards healing past wounds. Removing Columbus's name from the holiday, wrote Reyes, would "shift the focus of this day towards honoring our indigenous ancestors" and "finding common ground and making amends."

When scrolling through social media and talking to his classmates, Reyes noticed that other students have also voiced similar criticisms of the name Columbus Day. "There have been several occasions where, upon mention of Columbus Day, people would correct me or others with the term 'Indigenous People's Day,'" said Reyes.

**There have been several occasions where, upon mention of Columbus Day, people would correct me or others with the term 'Indigenous People's Day.'**

MIT's Latinos in Science & Engineering club also indicated support for renaming Columbus Day in an email to *The Tech*. They have not contacted MIT Administration about it.

*The Tech* also reached out to MITaly, MIT's Italian student club on campus, due to Italian-Americans' historical support of Columbus Day. Co-Presidents Giampaolo Gobbo and Gherardo Vita declined to give a position on the issue of renaming the holiday. They cited an inability to speak on behalf of all club members and describe the complexities of Columbus's part in the treatment of natives as requiring a "lengthy and in depth discussion." However, they stated that MITaly would "remain open to discussion should MIT feel appropriate for [them] to get involved."

In an email to *The Tech*, Kimberly Allen from the MIT News Office said that Ms. Alyce Johnson's campaign is still in the early stages and requires "wider community engagement and faculty governance" before MIT administration makes any final decisions." Ms. Allen encouraged "anyone interested in getting involved or sharing opinions on a possible change... to contact the ICEO office directly at iceo@mit.edu."

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## BOSTON MUSICA VIVA

Richard Pittman  
Music Director

## IF FROM THE DISTANCE

Our 50th Anniversary Concert featuring the World Premiere of John Harbison's *IF*

Saturday, Oct. 20, 2018 at 8pm | MIT's Kresge Auditorium

In celebration of the start of our anniversary and John Harbison's 80th birthday, we open our 50th Season of New Music with *IF*, a monodrama co-commissioned by BMV based on Hölderlin's "If, from the distance" featuring the BMV debut of soprano Lucy Fitz Gibbon.

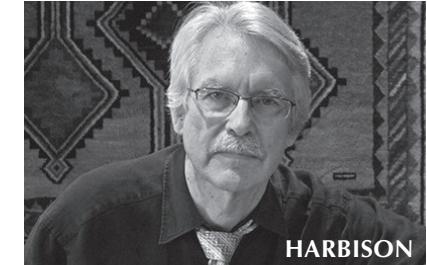
The program also includes Niccolò Castiglioni's *Tropi* (a selection from BMV's first season), Judith Weir's *Blue-Green Hill* and Gunther Schuller's *Four Vignettes*—both past BMV commissions—and a new bagatelle by Eitan Steinberg.

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FITZ GIBBON



HARBISON

## MIT Federal Credit Union Seeks Candidates for 2019 Board of Directors Election

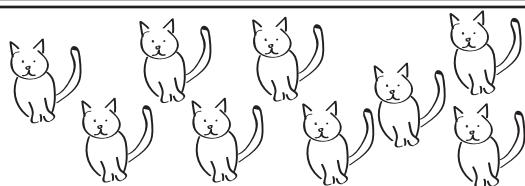
Our members own MIT Federal Credit Union. With that in mind, our member-elected, volunteer Board of Directors formulate and support decisions with our members' and the MIT Community's interest at heart.

MIT Federal Credit Union's nominating committee is currently seeking credit union members who are interested in serving on the Board of Directors. Three 3-year terms on the board will be open for the 2019 election in the Spring.

The application deadline is Friday, November 16, 2018. If interested or for more info, visit [mitfcu.org/elections](http://mitfcu.org/elections)



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This cottage can sleep 6 persons, with two private bedrooms, two baths, a family room, a parlor and dining room, a fully equipped kitchen, washer/dryer machines, and a sizeable deck. The week can be put into a points-based exchange program with RCI or VRI, or used for CCHE "internal exchanges" at more convenient times if another week is available for exchange. This has worked for the seller, over several years. The annual maintenance fees have been about \$500, and will be due for 2018. Buyer to pay fee, and arranges/pays closing. If interested or for more information leave a message for Prof. W. Johnson at [wjohnson@mit.edu](mailto:wjohnson@mit.edu) or campus tel 253-2952

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MIT CENTER FOR  
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## Human Rights & Technology



New fellowship program at MIT CIS

Awardees receive \$2,000 to pursue their research proposal

Open to all full-time  
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### CALL FOR PROPOSALS

The program will support the students' research, participation in a working group, and other activities. Applications are not limited to any particular topic within the frame of human rights and technology.

We are particularly interested in four broad areas:

- Migrants and refugees
- Biotechnology
- Privacy and surveillance
- Documentation, witnessing, archives

Applications due in PDF format to John Tirman, [tirman@mit.edu](mailto:tirman@mit.edu), by Monday, October 29, at 5:00 pm. Awardees will be announced on November 12. Research must be completed by August 31, 2019.

#### Requirements:

- Description of the research problem to be addressed, how the research will be conducted, and what outputs are anticipated (1000-word limit)
- Brief statement of interest in human rights (200-word limit)
- CV
- One letter of recommendation from faculty, or someone comparable.

DUE OCT 29

More Information: <https://cis.mit.edu/programs/human-rights-technology>

# Biz pays the bills

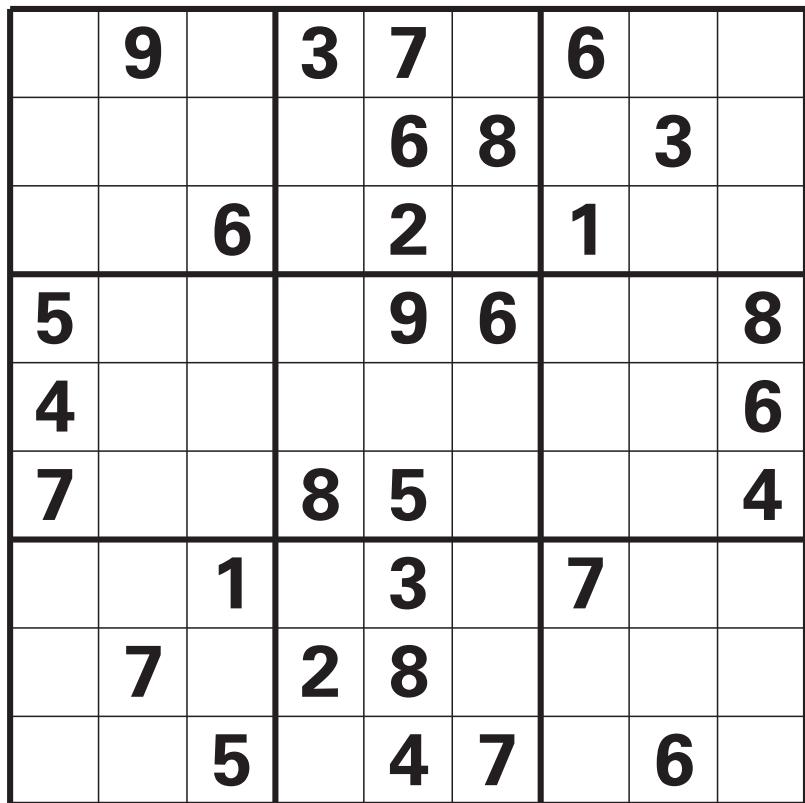
Join the Business Department of *The Tech* and earn \$12/hr!

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# Boba

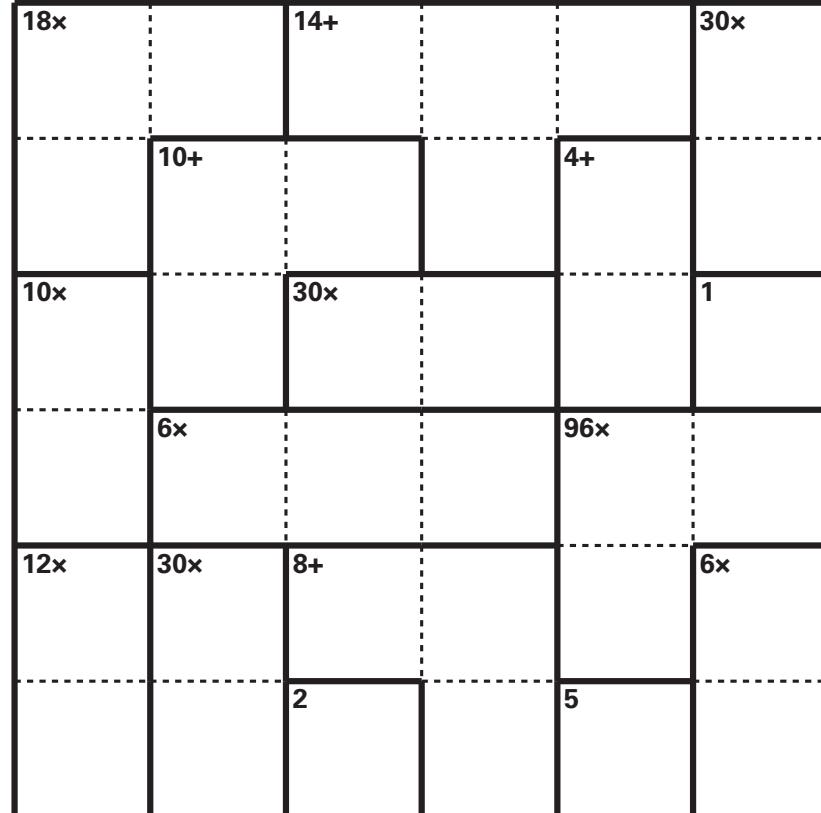
## Solution, page 16



Instructions: Fill in the grid so that each column, row, and 3 by 3 grid contains exactly one of each of the digits 1 through 9.

# Flu

## Solution, page 16



Instructions: Fill in the grid so that each column and row contains exactly one of each of the numbers 1–6. Follow the mathematical operations for each box.

# Let's Play Pool

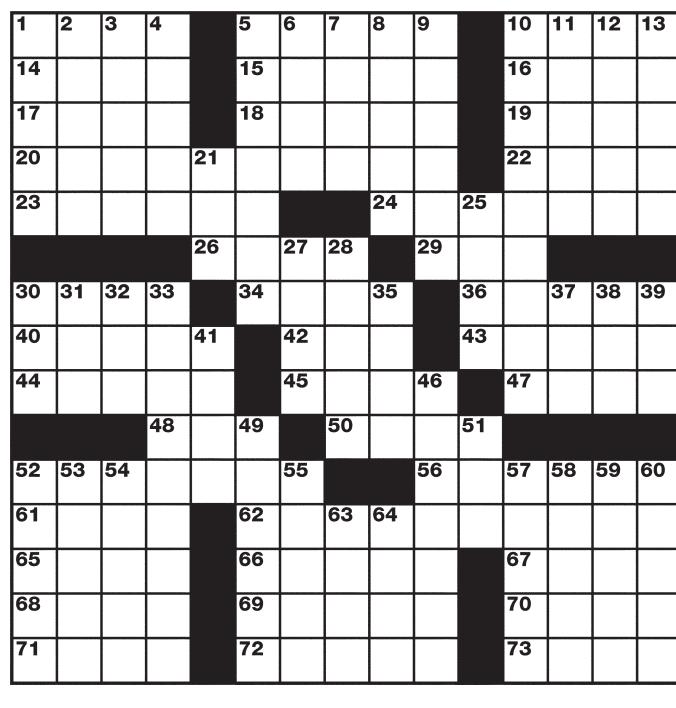
## Solution, page 16

## ACROSS

- 1 Sports squad
- 5 Push
- 10 Affectionate greeting
- 14 In an aimless fashion
- 15 Competitive personality
- 16 Reason to scratch
- 17 Revise
- 18 Prophetic signs
- 19 Entryway
- 20 At the perfect moment
- 22 Confident
- 23 Had a hunch
- 24 Placed in a schedule
- 26 Two-purpose
- 29 Health club
- 30 Degs. in finance
- 34 Experts, for short
- 36 Monk's home
- 40 Extra effort, informally
- 42 Shirt or blouse
- 43 Camel's South American cousin
- 44 Backyard barbecue spot
- 45 Short satirical piece
- 47 Simple to do

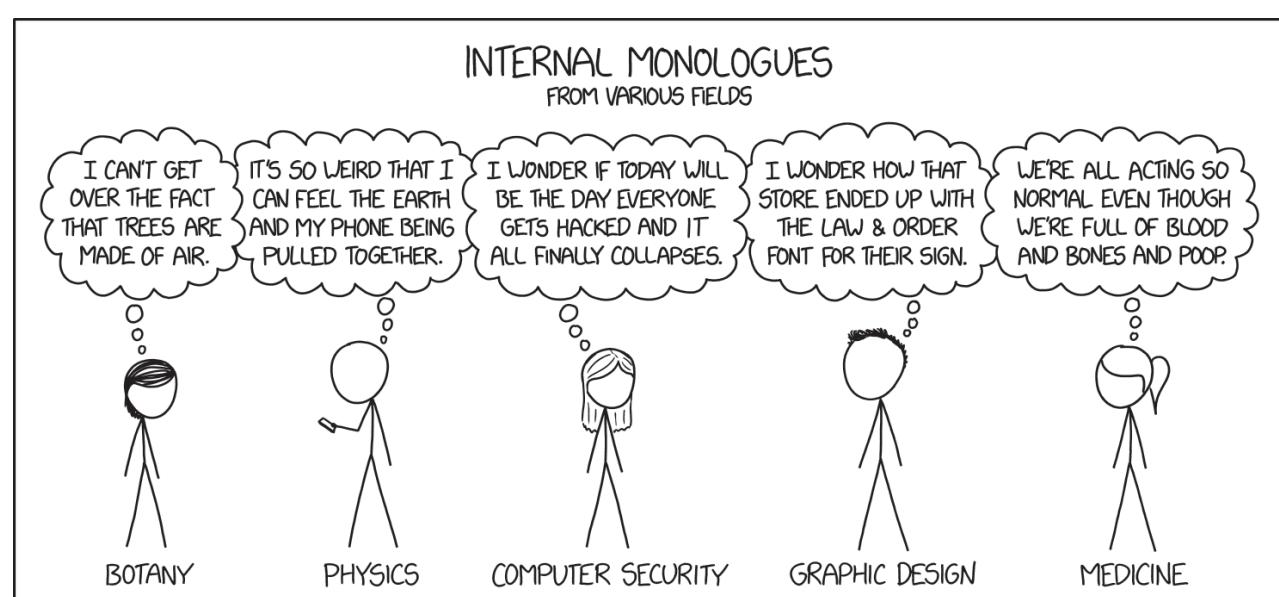
#### 48 Navy noncom: Abbr.

48 Navy noncom: Abbr.	6 Church choir song
50 What blizzards are made of	7 Oil cartel
52 Bug-blocking window inserts	8 The second planet
56 Cooks in a barbecue	9 Flip-chart stands
61 Animal's den	10 Thanksgiving seating for youngsters
62 Place for a wallet or handkerchief	11 "Cut __!" ("Stop that!")
65 Karenina of fiction	12 Cross home plate
66 Without assistance	13 Destroy, as documents
67 Add to the payroll	21 Turner who founded CNN
68 Variety of pear	25 Milky gemstone
69 Sturdily constructed	27 __ and crafts
70 "So, what __ is new?"	28 Takes a peek
71 Try to find	30 Floor-washing implement
72 Put an __ (stop)	31 Constricting snake
73 Snow coaster	32 Qty.
 <b>DOWN</b>	33 Holder of basil and oregano
1 Stadium levels	35 Wheel of Fortune turn
2 __ Bauer (clothing store chain)	37 Sheep's sound
3 Adjust, as car wheels	38 Three letters in "mommy"
4 Ancient legends	39 "That's great news!"
5 Got off the sofa	41 Optimistic wish
	46 Submarine weapon
	49 At first, second or third
	51 Try to win over



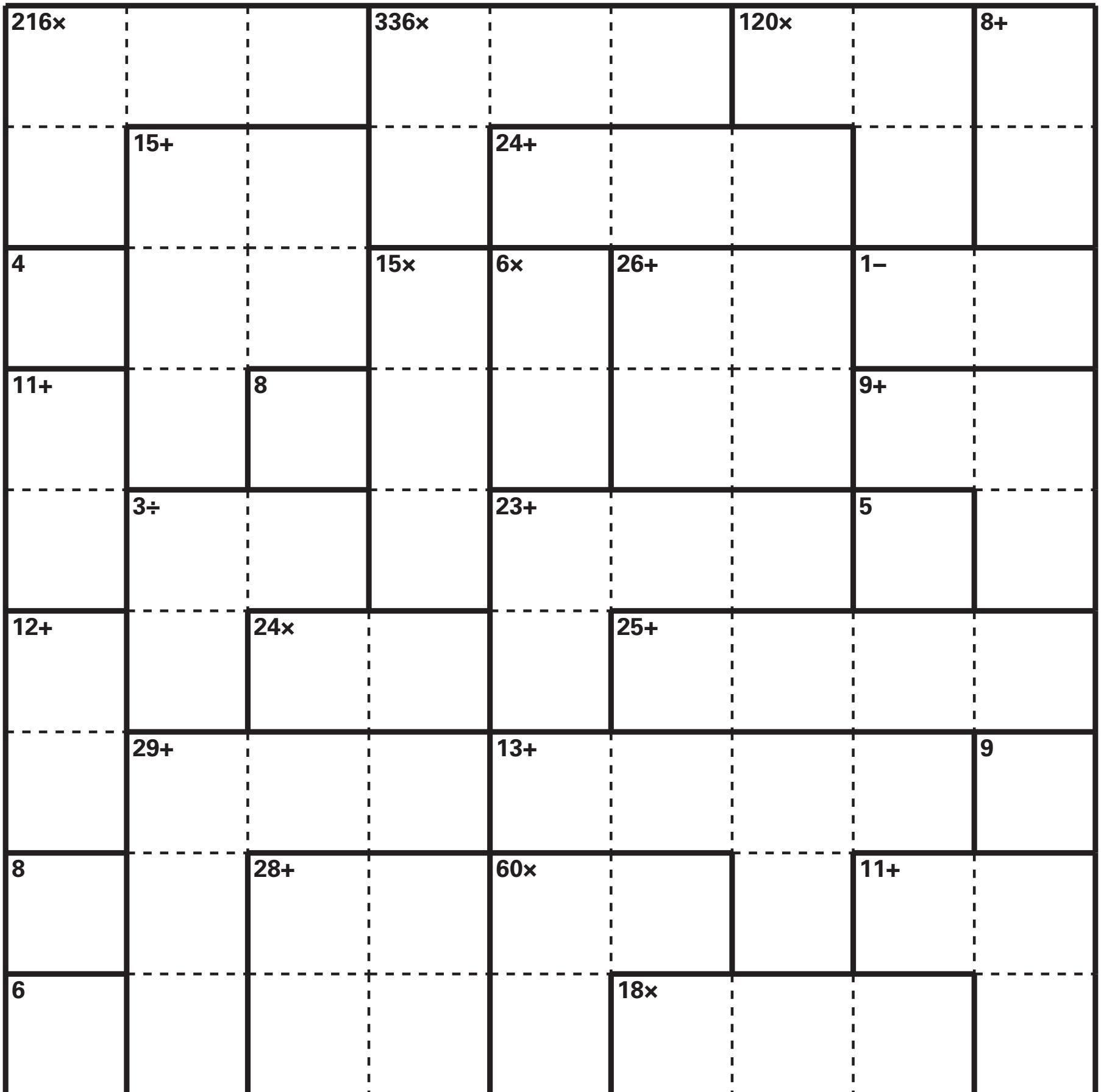
52 Thick slices	58 Expertise
53 Summer camp boat	59 Wasting no words
54 Laundry cycle	60 Spirited horse
55 Beauty parlor	63 Cooler than cool
57 Feels sore	64 Make a sweater, say

[2057] Internal Monologues



# Chicken Thighs

Solution, page 16



Instructions: Fill in the grid so that each column and row contains exactly one of each of the numbers 1–9. Follow the mathematical operations for each box.



## [2054] Data Pipeline

CHECK IT OUT—I MADE A  
FULLY AUTOMATED DATA  
PIPELINE THAT COLLECTS  
AND PROCESSES ALL THE  
INFORMATION WE NEED.

IS IT A GIANT HOUSE OF CARDS  
BUILT FROM RANDOM SCRIPTS  
THAT WILL ALL COMPLETELY  
COLLAPSE THE MOMENT ANY  
INPUT DOES ANYTHING WEIRD?

IT... MIGHT NOT BE.  
I GUESS THAT'S SOMETH-  
WHOOPS, JUST  
COLLAPSED. HANG  
ON, I CAN POTALA IT

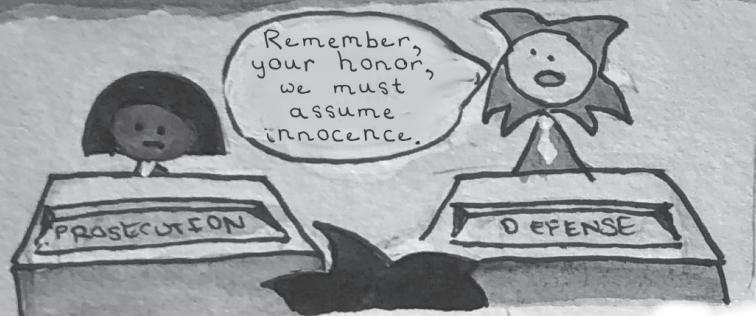
"Is the pipeline literally running from your laptop?" "Don't be silly, my laptop disconnects far too often to host a service we rely on. It's running on my phone."

# Introduction to Real Analysis

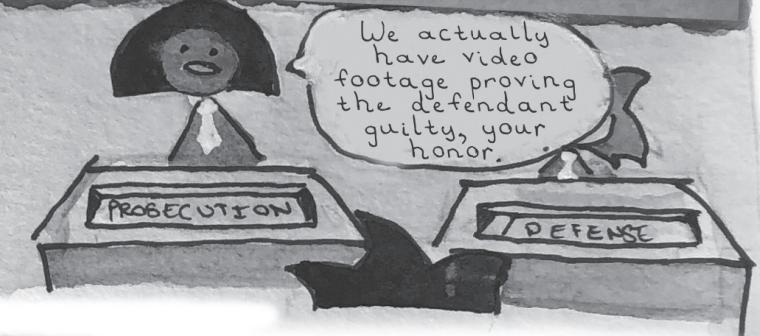
How do you prove non-existence in math?

So, people say "you can't prove a negative statement." Not true. It's hard. But in math, it's possible with a "proof by contradiction."

We start by assuming something *does* exist, and reason through it.

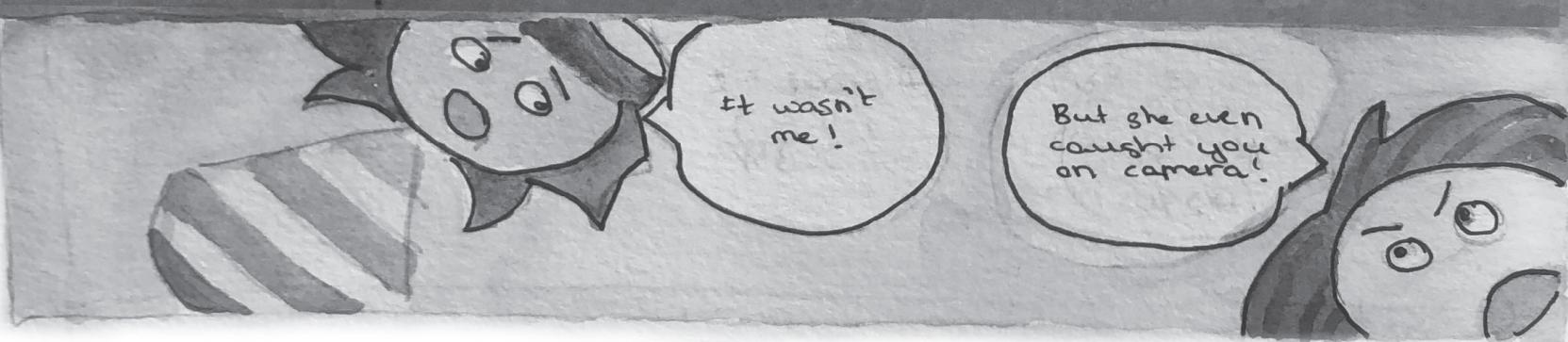


If we find a contradiction within our reasoning, we must conclude that thing does not exist.

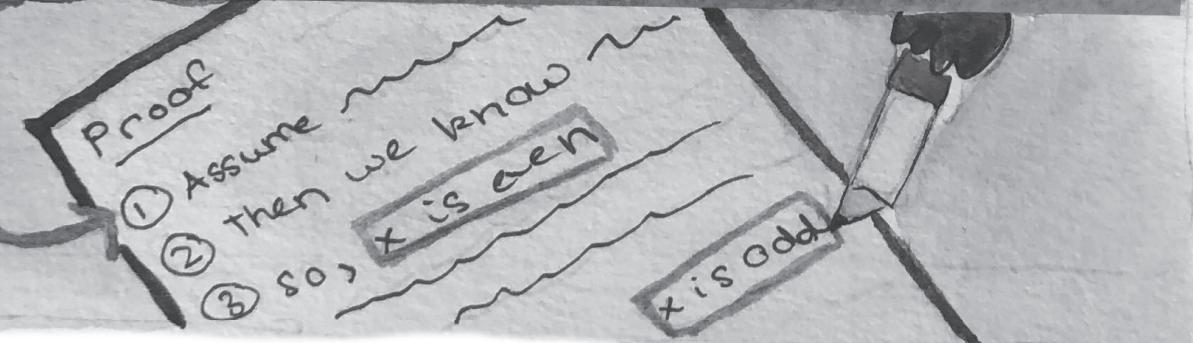


But why?

When two people contradict each other, you know one of them has got to be wrong.



Similarly, in math, if two of the lines in your proof contradict each other, then there's a lie in there somewhere.



And if every step you took in the proof was correct, then the lie can't be in any of the steps you took. The lie must be way back in the very first assumption you made.

# MIT Cricket runners up in American College Cricket Northeast Championship

*Team continues streak of placing one round better every championship*

By Keshav Gupta

MIT Cricket played its first league game against Northeastern, which it lost despite a brilliant counterattacking half-century from Usman Ayyaz '17. The second game, however, resulted in the largest victory margin in the entire tournament and saw MIT on the favorable side, beating Boston University by 75 runs.

Akshat Agarwal G spearheaded the batting effort with a 43 off 27 balls whereas the spin trio of Murthy Arelekatti G, Sumit Agarwal G and Suhas Kowshik G spun a web around BU from which they could never recover. As a result, MIT finished second in the

group of three and qualified for the semifinal stage.

MIT's semifinal game against UMass Boston resulted in MIT bowling the opposition out for a measly 98 thanks to an all-around bowling effort from the pace quartet of Moiz Imam '18, Jehangir Amjad G, Agarwal and Ayyaz. Anirudh Nambiar G then held one end up while chasing, nearly getting a half-century in the process and ensuring MIT got to the target without much hassle.

For the final game of the tournament, MIT faced off against a team they had just beaten the previous weekend: UMass Lowell. Vishrant Tripathi G and

Imam got early wickets to restrict scoring towards the beginning. While chasing, MIT got themselves in a tight spot after a brilliant start, needing 65 runs off nine overs. Vaikkunth Mugunthan G and Keshav Gupta '21 then produced a partnership of 51 runs to bring MIT close to the target. MIT couldn't quite finish off the chase even after a handy half-century from Mugunthan, ending up two agonizing runs short of the target.

This was MIT's best ever performance at the annual ACC North East Championship and they have continued their trend of going one step further every year!



LEON YIM—THE TECH

**MIT midfielder #32 Jessica Sonner '22** breaks free from three Coast Guard Academy foes and looks for a teammate to pass to during an intense half of the MIT vs. Coast Guard Academy game on Saturday.

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### Solution to Boba

from page 13

2	9	4	3	7	1	6	8	5
1	5	7	9	6	8	4	3	2
3	8	6	5	2	4	1	9	7
5	1	2	4	9	6	3	7	8
4	3	8	7	1	2	9	5	6
7	6	9	8	5	3	2	1	4
8	4	1	6	3	5	7	2	9
6	7	3	2	8	9	5	4	1
9	2	5	1	4	7	8	6	3

### Solution to Flu

from page 13

1	3	5	4	2	6
6	2	4	3	1	5
2	4	6	5	3	1
5	1	3	2	6	4
3	5	1	6	4	2
4	6	2	1	5	3

### Solution to Chicken

from page 14

1	8	9	2	7	6	5	4	3
3	1	2	4	9	8	7	6	5
4	2	3	5	1	9	8	7	6
9	7	8	1	6	5	4	3	2
2	9	1	3	8	7	6	5	4
5	3	4	6	2	1	9	8	7
7	5	6	8	4	3	2	1	9
8	6	7	9	5	4	3	2	1
6	4	5	7	3	2	1	9	8

### Solution to Pool

from page 13

TEAM	SHOVE	KISS
IDLY	TYPEA	ITCH
EDIT	OMENS	DOOR
RIGHTONCUE	SURE	
SENSED	SLOTTED	
DUAL	SPA	
MBAS	PROS	ABBEY
OOMPH	TOP	LLAMA
PATIO	SKIT	EASY
CPO	SNOW	
SCREENS	ROASTS	
LAIR	BACKPOCKET	
ANNA	ALONE	HIRE
BOSC	SOLID	ELSE
SEEK	ENDTO	SLED